



- A. FANS SHALL RUN CONTINUOUSLY DURING OCCUPIED MODE.
  - B. OCCUPIED AND UNOCCUPIED MODE SHALL BE AS DETERMINED BY THE ENGINEERING CONTROL CENTER.
  - C. EF-3 SHALL RUN CONTINUOUSLY IN THE OCCUPIED MODE.
2. TEMPERATURE CONTROL
- A. OCCUPIED
    - A.A. T-1 SHALL MODULATE VALVES V-1 AND V-2 LOCATED IN FCU-9-1, FCU-9-2, FCU-9-3 TO MAINTAIN SETPOINT. T-2 SHALL MODULATE VALVES V-1 AND V-2 LOCATED IN FCU-9-4, FCU-9-5, FCU-9-6 TO MAINTAIN SETPOINT.
    - A.B. T-1 AND T-2 SHALL BE A HEATING/COOLING THERMOSTAT WITH AN ADJUSTABLE DEADBAND BETWEEN HEATING AND COOLING SETPOINT
  - B. UNOCCUPIED
    - B.A. (HEATING) (COOL) FANS AND OPEN HEATING VALVE. V-1, TO MAINTAIN HEATING SETBACK TEMPERATURE. BELOW 55°F. (COOL) AIR TEMPERATURE. HEATING VALVE SHALL MODULATE TO MAINTAIN INTERIOR UNIT TEMPERATURE OF 90°F (ADJUSTABLE).
    - B.B. (COOLING) (COOL) FANS AND OPEN COOLING VALVE. V-2. TO MAINTAIN INTERIOR SETBACK TEMPERATURE (ADJUSTABLE).

### ATC GENERAL NOTES

1. THE ATC CONTRACTOR SHALL FURNISH AND INSTALL ALL ELECTRICAL WIRING AND CONDUIT FROM POWER SOURCE, INCLUDING TERMINATION TO ALL REQUIRED ATC RELATED POWER CONNECTIONS INCLUDING, BUT NOT LIMITED TO, DDC CONTROLLERS, SENSORS, VALVE AND MOTOR ACTUATORS (INCLUDING SMOKE DAMPERS), ATC PANELS, ETC. THE ATC CONTRACTOR SHALL BE WHOLLY RESPONSIBLE FOR ALL POWER REQUIREMENTS NECESSARY FOR A COMPLETE INSTALLATION FROM THE POWER SOURCE TO ALL ATC RELATED CONNECTIONS.
2. WATER PRESSURE DROP THROUGH ATC CONTROL VALVES SHALL NOT EXCEED 10 FT. HEAD. TWO-POSITION ATC VALVES UTILIZED FOR ISOLATION, BY-PASS OR SHUT-OFF PURPOSES SHALL BE FULL LINE SIZE.
3. THE ATC CONTRACTOR SHALL PROVIDE ALL POINTS REQUIRED TO ACCOMPLISH THE CONTROL SEQUENCES INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS. ALL POINTS SHALL BE TIED INTO THE ENGINEERING CONTROL CENTER (ECC). IN ADDITION, THE ATC CONTRACTOR SHALL PROVIDE ACCESS TO ALL ATC EQUIPMENT, OPERATE AND MAINTAIN ALL EQUIPMENT AND DEVICES (IE. CHILLERS, PUMPS, FANS, VALVES, DAMPERS, FLOW MEASURING DEVICES, SENSORS, ETC.) INDICATED THROUGHOUT THE CONTRACT DOCUMENTS.
4. PROVIDE EQUIPMENT STATUS FOR ALL MECHANICAL EQUIPMENT. EQUIPMENT FAILURES SHALL BE ALARMED AT THE ECC. PROVIDE END SWITCHES FOR ALL MOTOR OPERATED DAMPERS. END SWITCHES SHALL BE INTERFACED WITH THE ECC.
5. PROVIDE TEMPERATURE SENSORS TIED INTO THE ECC AT THE INLET AND OUTLET OF ALL HEAT EXCHANGE EQUIPMENT (CHILLERS, HEAT EXCHANGERS, ETC.)
6. GENERAL EXHAUST FANS, VENTILATION FANS, SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS. UNLESS OTHERWISE NOTED, DAMPERS SHALL OPEN WHEN FAN IS ENERGIZED AND CLOSED WHEN FAN IS DE-ENERGIZED.
7. PROVIDE CURRENT SENSING RELAYS FOR ALL MECHANICAL EQUIPMENT AS REQUIRED TO PROVIDE EQUIPMENT STATUS. EQUIPMENT STATUS SHALL BE INDICATED AS THE ECC.
8. ALL DDC CONTROLS SHALL BE TIED INTO THE MAIN ECC LOCATED IN BUILDING #1, ROOM 120.



1. WHEN THE OUTSIDE AIR IS ABOVE 55°F (ADJUSTABLE), THE CHILLER AND LEAD CHILLED WATER PUMP SHALL BE COMMANDED ON BY THE EMCS.
2. PROVIDE AUTOMATIC SWITCHOVER TO LAG PUMP WHENEVER LOSS OF FLOW IS SENSED BY CURRENT SENSING RELAYS AT EACH PUMP. PROVIDE ALTERNATOR TO CONTROL LEAD/LAG PUMP OPERATION. LEAD PUMP SHALL BE ALTERNATED EVERY THREE HOURS (ADJUSTABLE) OF RUN TIME.
3. WHEN FLOW IS PROOFED BY THE CHILLER FLOW SWITCH, THE CHILLER SHALL BE ENERGIZED AND OPERATE UNDER CONTROL OF ITS FACTORY INSTALLED CONTROL PACKAGE.
4. SHOULD CHILLED WATER RETURN TEMPERATURE EXCEED THE CHILLER HI-LIMIT INLET TEMPERATURE (AS DETERMINED BY THE CHILLER MANUFACTURER), CHILLER SHALL BE DE-ENERGIZED AND AN ALARM SHALL BE INDICATED AT THE EMCS.
5. SHOULD CHILLER FAIL, PUMP(S) SHALL BE DE-ENERGIZED AFTER TIME DELAY (ADJUSTABLE).
6. BELOW 55°F (ADJUSTABLE) CHILLER SHALL BE COMMANDED OFF AND PUMP(S) DE-ENERGIZED AFTER TIME DELAY.
7. DIFFERENTIAL PRESSURE SENSOR SHALL CONTROL DIFFERENTIAL PRESSURE VALVE TO MAINTAIN SYSTEM DIFFERENTIAL SETPOINT. THE MAXIMUM DIFFERENTIAL PRESSURE SETPOINT TO BE FIELD DETERMINED BY THE A/C CONTRACTOR.
8. DIFFERENTIAL PRESSURE RESET: THE VALVE POSITION OF ALL 2-WAY VALVES ASSOCIATED WITH THIS SYSTEM SHALL BE MONITORED THROUGH THE ECC VALVE POSITION SHALL BE POLLED EVERY 10 MINUTES - ADJUSTABLE). THE DIFFERENTIAL PRESSURE SETPOINT SHALL BE DECREASED INCREMENTALLY UNTIL AT LEAST ONE VALVE IS A MINIMUM OF 90% (ADJUSTABLE) OPEN. SHOULD ONE OR MORE OF THE VALVES BE GREATER THAN 95% (ADJUSTABLE) OPEN, THE SETPOINT SHALL BE INCREASED INCREMENTALLY, NOT TO EXCEED THE MAXIMUM SETPOINT.



1. STEAM CONTROL VALVES V-1 AND V-2 SHALL REMAIN CLOSED WHEN CIRCULATOR PUMPS ARE DE-ENERGIZED.
2. LEAD CIRCULATOR PUMP SHALL RUN CONTINUOUSLY. LAG PUMP SHALL START AUTOMATICALLY WHEN LOSS OF FLOW IS SENSED BY CURRENT SENSING RELAYS AT EACH PUMP. PROVIDE ALTERNATOR TO CONTROL LEAD/LAG PUMP OPERATION. LEAD PUMP SHALL BE ALTERNATED EVERY 300 HOURS (ADJUSTABLE) OF RUN TIME.
3. T1 SHALL MODULATE V-1 AND V-2 TO MAINTAIN SETPOINT OF 180° (ADJUSTABLE).
4. DIFFERENTIAL PRESSURE SENSOR SHALL CONTROL DIFFERENTIAL PRESSURE VALVE TO MAINTAIN SYSTEM DIFFERENTIAL SETPOINT. THE MAXIMUM DIFFERENTIAL PRESSURE SETPOINT TO BE FIELD DETERMINED BY THE ATC CONTRACTOR
5. DIFFERENTIAL PRESSURE RESET: THE VALVE POSITION OF ALL 2-WAY VALVES ASSOCIATED WITH THIS SYSTEM SHALL BE MODIFIED THROUGH THE ECC (VALVE POSITION SHALL BE POLLED EVERY 10 MINUTES - ADJUSTABLE). THE DIFFERENTIAL PRESSURE SETPOINT SHALL BE DECREASED INCREMENTALLY UNTIL AT LEAST ONE VALVE IS A MINIMUM OF 80% (ADJUSTABLE) OPEN. SHOULD ONE OF THE VALVES BE GREATER THAN 80% (ADJUSTABLE) OPEN, THE SETPOINT SHALL BE INCREASED INCREMENTALLY, NOT TO EXCEED THE MAXIMUM SETPOINT.

### MECHANICAL ROOM VENTILATION CONTROL

1. WHEN MECHANICAL ROOM REVERSE ACTING THERMOSTAT SENSES TEMPERATURE ABOVE 85°F (ADJUSTABLE) ALL AIR LOUVER M.O.D.'S SHALL OPEN AND VENTILATION FAN SHALL ENERGIZE. ON A DROP IN TEMPERATURE BELOW R.A. STAT. SETPOINT, THE OPPOSITE SHALL OCCUR.



SPACE THERMOSTAT, TI, SHALL MODULATE VALVE, V-1, TO MAINTAIN SETPOINT



1. T-1 SHALL MODULATE VALVES V-1 AND V-2 TO MAINTAIN SETPOINT.
2. T-1 SHALL BE A HEATING/COOLING THERMOSTAT WITH AN ADJUSTABLE DEADBAND BETWEEN HEATING AND COOLING SETPOINT.

## CABINET HEATER CONTROL

1. CABINET HEATER THERMOSTATS SHALL BE DESIGNED TO OPERATE ON A 2°F DIFFERENTIAL OVER A RANGE OF 55°F-85°F AND SHALL BE OF THE START/STOP TYPE.
2. FAN MOTOR SHALL CYCLE TO MAINTAIN THERMOSTAT SETTING (65°F). THERMOSTAT SHALL BE MOUNTED IN RETURN AIR.
3. PROVIDE AQUASTAT MOUNTED TO HEATING RETURN LINE TO PREVENT OPERATION OF CABINET HEATER FAN MOTOR WHEN HOT WATER IS NOT AVAILABLE TO COIL. AQUASTAT SETTING SHALL BE APPROXIMATELY 90°F.
4. PROVIDE TWO WAY CONTROL VALVE (2-POSITION TYPE): BELOW 60°F OUTSIDE AIR (ADJUSTABLE) TEMPERATURE, CONTROL VALVE SHALL BE OPEN. ABOVE 60°F OUTSIDE AIR (ADJUSTABLE) TEMPERATURE, CONTROL VALVE SHALL BE CLOSED.


FINAL DOCUMENTS SUBMISSION  
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